What is claimed is:

1 A device for detecting and measuring the concentrations of multiple analytes present in a single liquid sample, which device comprises a matrix material supported on a rigid to semirigid support material, wherein said matrix material comprises

a) a central sample receiving portion, which portion is connected to

b) at least two outwardly extending arms along which liquid sample flows outwardly from the central sample receiving portion, wherein

c) each separate arm has been prepared by impregnation with reagents needed to conduct a test for the detection and measurement of a predetermined analyte believed to be present in said liquid sample, which reagents react with said analyte to produce a measurable signal that is proportional to the concentration of said analyte in said sample.

2 The device according to claim 1 wherein sample applied is selected from the group consisting of whole blood, plasma or serum.

3 The device according to claim 1 wherein sample applied is urine.

4 The device according to claim 1 wherein sample applied is saliva.

5 The device according to claim 1 wherein the sample applied is an extract selected from the group consisting of food, drug, soil, or plant.

6 The device according to claim 1 wherein the sample applied is environmental water.

7 The device according to claim 6 where the sample is selected from among tap water, swimming pool water, or fish tank water.

8 The device according to claim 1 wherein the matrix is a membrane, or a filter paper.

9 The device according to claim 1 wherein the matrix is prepared from one or a combination of two or more membranes selected from among asymmetric membranes and polyethylene sulfone membranes.

10 The device according to claim 9 where in the matrix may be prepared from a combination of membranes and filter paper, with bridge pads included where junctions of membranes and paper occur.

1. The device according to claim 1 wherein the number of connected arms may vary from 2 to 16.

12 The device according to claim 1 wherein the measurable signal produced is colorimetric, fluorescent or electrochemical.

13 The device according to claim 12 wherein the signal produced at each reagent site is a color that is measured by a device comprised of at least one light emitting diode and at least one light detector in the range between 360 and 880nm wavelength.

14 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among total cholesterol, HDL-cholesterol, triglyceride, LDL-cholesterol, glucose and alanine aminotransferase.

15 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among blood urea nitrogen, creatinine, albumin, total protein, phosphate, and ammonia.

16 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes elected from among alanine aminotransferase, bilirubin, alkaline phosphatase, aspartate aminotransferase and lactate dehydrogenase.

17 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among creatinine kinase, creatinine kinase-MB, lactate dehydrogenase, albumin and homocysteine.

18 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among

sodium, potassium, chloride, and carbon dioxide.

19 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring more than two analytes, said analytes being selected from among glucose, cholesterol, triglyceride, alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, lactate dehydrogenase, creatinine kinase, creatinine kinase MB, bilirubin, calcium, magnesium, phosphorus, total protein, albumin, urea, creatinine, uric acid, HDL-cholesterol, lipase, ammonia, gammaglutaryl transferase, sodium, potassium, chloride, and carbon dioxide to form a General Health Panel.

20 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among phenylalanine, galactose, and homocysteine.

21 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among hemoglobin, glycated hemoglobin, ketone bodies and glucose.

22 The device according to claim 2 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among glucose-6-phosphate dehydrogenase, pyruvate kinase, and glucose phosphate

isomerase.

23 The device according to claim 3 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among glucose, bilirubin, pH, urobilinogen, urea, hemoglobin, specific gravity, ketone bodies, leukocytes, nitrite, total protein, albumin, microalbumin, creatinine, oxalate, and N-acetyglucosaminidase.

24 The device according to claim 4 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for at least two of the analytes measuring alcohol and one or more barbiturates.

25 The device according to claim 5 wherein the central sample-receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among glucose, cholesterol, ammonia, protein, nitrogen and lipids.

26 The device according to claim 6 wherein the central sample receiving location is connected to separate arms, each equipped to measure one analyte, and there are reagents present for measuring at least two analytes selected from among total chlorine, free chlorine, total hardness, pH, total alkalinity ammonia and combinations thereof.

27 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying a kidney disorder.

28 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying a cardiac disorder.

29 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying a liver disorder.

30 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying a lipid-caused disorder.

31 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in monitoring electrolyte balance or diagnosing electrolyte imbalance.

32 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in monitoring general health or detecting unexpected dysfunction.

33 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying diabetes.

34 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying neonatal genetic disorder.

35 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying enzyme defects in erythrocytes.

36 The device of claim 1 wherein the sample introduced to the sample receiving location is capillary blood.

37 The device of claim 36 wherein capillary blood is obtained from the patient's finger, heel or earlobe.

38 A device according to claim 1 wherein the separate arms of the device are equipped to measure, simultaneously on one patient fluid sample, a group of analytes selected to aid in identifying key metabolites and metabolic by-products.